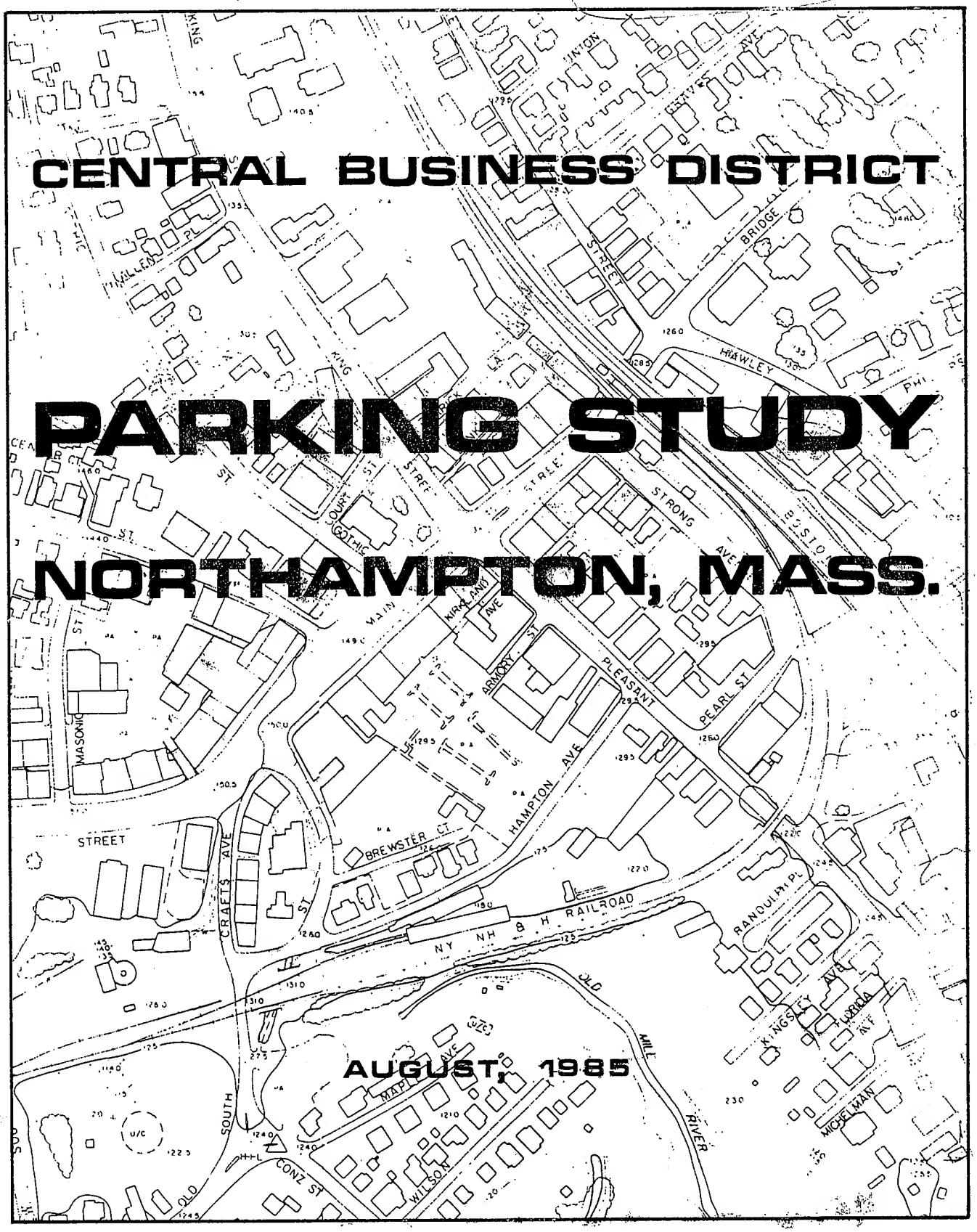
Gene Bunnell



CENTRAL BUSINESS DISTRICT

PARKING STUDY

NORTHAMPTON, MASS.

AUGUST, 1985

RAMP ENGINEERING ASSOCIATES

CONSULTING ENGINEERS AND DESIGNERS

1615 NORTHERN BOULEVARD, MANHASSET, N.Y., 11030

CENTRAL BUSINESS DISTRICT

PARKING STUDY

NORTHAMPTON, MASSACHUSETTS

Prepared for:

THE CITY OF NORTHAMPTON, MASSACHUSETTS

David B. Musante, Jr.
Mayor

Gene Bunnell
Director of Planning and Development

AND

THE NORTHAMPTON DEVELOPMENT CORPORATION

Charles DeRose
President

We wish to acknowledge the participation and contributions of:

THE MAYOR'S DOWNTOWN PARKING STUDY COMMISSION

CHAIRMAN

James Carey

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1959-1982

Andrew J. Peck, P.E.

August 22, 195

The City of Northampton
and
Northampton Development Corporation

Gentlemen:

In accordance with the terms of our Agreement No. 85E-143 we are pleased to submit the enclosed report on parking conditions in the central business district of Northampton.

The report identifies the need to develop an additional 236 parking spaces to meet a current parking space deficiency in downtown Northampton.

The report further identifies the most logical location for developing this additional parking supply as the site of the present Armory Street Parking Lot.

Parking Program - Alternate A presents details of our recommended plan for developing these additional parking spaces, and some additional commercial rental space as well. Alternatives B & C present other possible design configurations.

We believe that the recommended plan will qualify for parking facility financing assistance from the Commonwealth of Massachusetts, and we have presented a financial summary for the project showing the favorable impact of this state grant.

The report shows that the project is financially feasible for any of the three alternatives, if state assistance is obtained.

We appreciate the opportunity to submit this report. We gratefully acknowledge the cooperation and assistance of Mr. Gene Bunnell, Planning Director of the City of Northampton, and the Mayors Parking Committee.

Respectfully submitted,

RAMP ENGINEERING ASSOCIATES

By Michael S. Dimitri
Michael S. Dimitri, P.E.

MSD:djk
Encl.

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

LIST OF FIGURES

1. INTRODUCTION

Purpose of Report

The City of Northampton, Massachusetts and the Northampton Development Corporation have engaged Ramp Engineering Associates, Consulting Engineers, for these purposes:

1) The study and analysis of parking conditions in the central business district of Northampton.

2) Analysis of the operational and financial performance of the existing municipal on-street and off-street parking facilities.

3) The planning of proposed off-street automobile parking facilities, as warranted, to serve the parking needs of the central business district of Northampton.

4) Review previously submitted studies and reports related to parking conditions, in particular, the 1981 Parking Needs Study by Mullen and Martin and the Downtown Parking Management Plan developed by the City of Northampton Office of Planning and Development.

5) The preparation of a parking study report.

The following report presents the results of the studies and investigations made by the Consulting Engineer, the Consulting Engineer's analysis and conclusions as to automobile parking space requirements for the central business district of Northampton, and the municipal parking facilities recommended by the Consulting Engineer.

Parking Study Area

As shown in Figure 1, (page 5), the central business district study area is roughly defined by Allen Place and Trumbull Road on the north, the Old South Street and Roundhouse parking lots on the south, New South Street and State Street to the west and Market Street and Hawley Street to the east. The total area is about 4/10 mile in the north-south direction and 4/10 mile in the east-west direction.

Parking Studies

For the purposes of this report, the Consulting Engineer conducted field parking studies throughout the central business district. These field studies were performed in late April / early May 1985 with personnel from the Consulting Engineer's organization and students from Smith College hired for this purpose in Northampton.

The field studies included:

- A complete inventory of all on-street and off-street parking facilities in the CBD.
- Accumulation counts of the number of cars parked in each municipal and county off-street facility and on each curb parking blockside in the CBD.
- Parker interviews at selected off-street parking facilities for trip destination and walking distance analyses.
- Spot observations regarding locations of illegal parking and vacant parking spaces.

As to the time of year which these parking studies were performed, we assume that our parking study results represent average conditions for the year.

Other Data

We are indebted to Mr. Gene Bunnell, Director of Planning and Development for Northampton, for his assistance in providing City records, maps, and copies of previous reports which were essential to the preparation of this report.

2. EXISTING PARKING SPACE SUPPLY

In April 1985, the Consulting Engineer made a complete and detailed inventory of the existing on-street and off-street parking spaces within the central business district. The sizes, shapes and capacities of all off-street parking facilities and the locations and types of all on-street parking spaces are shown on Figure 1, Existing Parking Facilities (next page).

Total Parking Space Supply

As shown in Figure 1, there are 2,431 parking spaces located in the Northampton central business district:

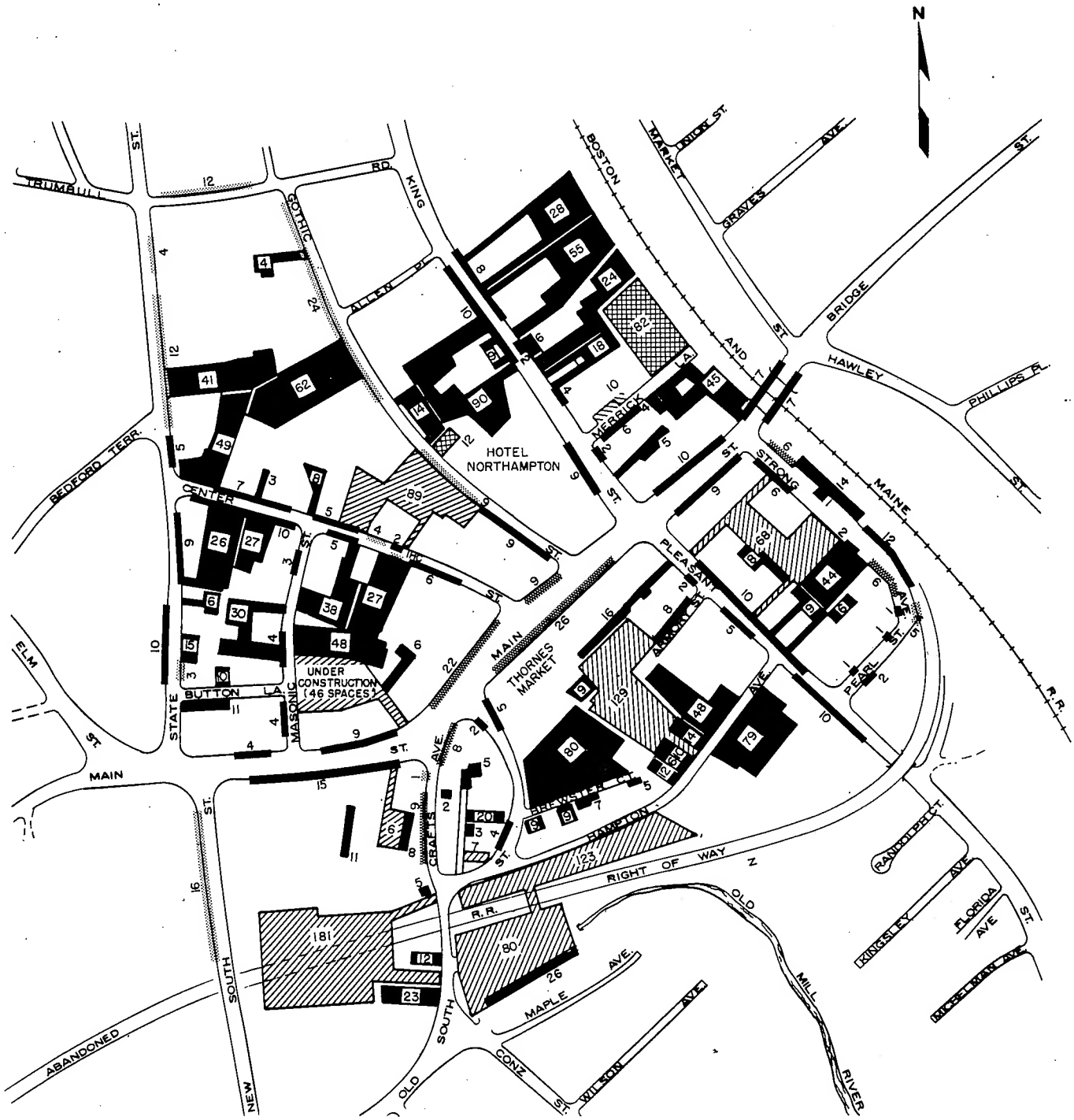
- 1,209 (49.7%) are in private parking lots.
- 701 (28.8%) are in municipal parking lots.
- 427 (17.6%) are legal curb parking spaces.
- 94 (3.9%) are in County parking lots.

For the purposes of analyses, we divided the CBD into three separate zones:

- Zone A - North of Main Street
- Zone B - Main Street
- Zone C - South of Main Street

Parking spaces in each of the three zones breakdown as follows:

	ZONE A	ZONE B	ZONE C
Percent of Total Supply	44.8%	5.3%	49.9%
Total No. of Spaces	1,091	126	1,214
Metered Curb Spaces	120	126	106
Free Curb Spaces	69	0	6
Municipal Lot Spaces	99	0	602
County Lot Spaces	94	0	0
Private Lot Spaces	709	0	500



LEGEND

		TOTAL NUMBER OF SPACES	
– METERED PARALLEL PARKING	—	266	TOTAL ON-STREET = 427
– METERED ANGLE PARKING	—	86	
– FREE CURB SPACES	—	75	
16 – PRIVATE LOT W/CAPACITY	—	1,209	TOTAL OFF-STREET = 2,004
68 – MUNICIPAL LOT W/CAPACITY	—	701	
75 – COUNTY LOT W/CAPACITY	—	94	

GRAND TOTAL/ALL SPACES = 2,431

FIGURE 1

EXISTING PARKING FACILITIES

CENTRAL BUSINESS DISTRICT

CITY OF NORTHAMPTON, MASSACHUSETTS

200 0 200 400

SCALE IN FEET

RAMP ENGINEERING ASSOCIATES
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MICHAEL S. SMITH, P.E.

On-Street Parking Spaces

There are a total of 427 legal on-street parking spaces in the central business district 189 (44.3%) are located north of Main Street, 126 (29.5%) are located on Main Street and 112 (26.2%) are located south of Main Street.

The 189 on-street parking spaces north of Main Street in the CBD (Zone A) breakdown as follows:

- 120 are 2 hour limit metered parking spaces whose rates are 5¢ per hour. These spaces are located on State Street, Masonic Street, Center Street, Gothic Street, King Street and Merrick Lane.

- 52 are free, unregulated spaces. These are located on State Street, north of Bedford Terrace; Trumbull Road, between State Street and Gothic Street; and Gothic Street, north of the Gothic Street municipal parking lot.

- 13 spaces are reserved for "Police Vehicles Only". These spaces are located on Gothic Street, adjacent to the Gothic Street municipal lot and 4 others are located in front of the police station on Center Street.

- 3 spaces are free with a 20 minute maximum time limit. These are located on the east side of State Street, just north of Button Lane.

- There is 1 free handicap parking space located in the vicinity of the police station on Center Street.

The 126 on-street parking spaces located on Main Street (Zone B) breakdown as follows:

- 112 spaces are 1 hour limit metered spaces whose rates are 10¢ per hour. These spaces are located between Strong Avenue and State Street / New South Street. Of these parking spaces 65 are "head-in" angle parking spaces and 47 are parallel parking spaces.

- 14 spaces are 10 hour limit metered spaces whose rates are 5¢ per hour or a discount of 25¢ per 10 hours. These long-term on-street meters are located between Strong Avenue and Hawley/Market Street, under the railroad trestle.

There are 112 on-street parking spaces located south of Main Street within the CBD (Zone C). These spaces breakdown as follows:

- 79 spaces are 2 hour limit metered spaces whose rates are 5¢ per hour. These spaces are located in various areas along Crafts Avenue, Armory Street, Pleasant Street, Pearl Street and Strong Avenue. 12 curb spaces on Strong Avenue and 9 curb spaces on Crafts Avenue are "head-in" parking, the remainder are parallel. 16 spaces are free, unregulated curb spaces. These spaces are located at the north end of New South Street on the west side, just south of Main Street.

- 7 metered parking spaces on the north end of Old South Street are 5¢ per 15 minutes with a 15 minute time limit regulation.

- There are 5 unmetered curb spaces which are located on the outside curb of the Strong Avenue/Pearl Street "bend". These spaces (located in front of Gleasons) are heavily utilized long-term free spaces in an otherwise "metered" area. If this is not property owned by Gleasons, we suggest enforcement.

- 4 spaces on the west side of Old South Street, between Hampton Avenue and Brewster Court are long-term metered spaces -- 10 hour limit with rates of 5¢ per hour or a discount 25¢ for 10 hours.

- There is one free curb parking space located at the north end of Crafts Avenue on the west side of the street -- this space is reserved for City Hall use.

Parking Lots - Municipal

There are 701 parking spaces located in 9 municipal off-street parking facilities. These facilities are broken down as follows:

Facility	No. of Spaces	Location	Operation/Comments
Roundhouse Lot	181	Off of Old South St.- Behind Municipal Bldg.	Free Parking. Chiefly serves Municipal Bldg. and City Hall.
Hampton Ave. Lot	123	Between Hampton Ave & abandoned Railroad R.O.W.	Free Parking. Serves many all day parkers.
Old South St. Lot	80	Off Old South St., south of Railroad R.O.W. Connects w/ Hampton Ave. Lot	Free Parking. Serves many all day parkers - carpool area for Springfield empl.
Gothic Street Lot	89	Between Center and Gothic Streets	57-10 hour meters, 15-2 hour meters, and 17 reserved spaces. Chiefly serves County Courthouse, N.I.S. and Police Station. Usage of spaces varies with court schedule by use of meter bags for "juror" spaces.
Armory St. Lot	129	Behind Main Street commercial, at the end of Armory St.	99- 2 hour meters, 30 - 10 hour meters. Mostly Main Street shopper parking.

Facility	No. of Spaces	Location	Operation/Comments
Strong Ave. Lot	68	Off of Strong Avenue, across from Railroad Station	20- 2 hour meters, 46-10 hour meters, 2 Handicap. Chiefly serves R.R. Station
Merrick Ave. Lot	10	Off Merrick Avenue, behind information booth	8- 1 hour meters 1-Handicap, 1-Free. Mostly Registry of Deeds parking
Old South St. "Cut-out"	7	At intersection of Old South St. & Hampton Avenue	7- 10 hour meters. Additional long term parking
City Hall Lot	14	Behind City Hall	5- 30 minute meters, 1-Handicap. An additional 8 spaces are reserved
Masonic St. Lot*	55	Off Masonic St. & Crackerbarrell Alley	55- Short term meters to serve shoppers

*Under construction during our field studies and thus not included in totals. This will not, however, be ignored in our analysis.

All Municipal Parking Spaces (On-Street & Off-Street)

The summary on the following page combines the on-street and off-street municipal parking spaces to illustrate the distribution of all municipal parking spaces in the central business district:

% Of All Municipal Parking Spaces(1)

	Regulated For Short-Term (2) Parkers	Regulated For Long-Term (3) Parkers	Totals
Zone A	15.8%	9.8%	25.6%
Zone B	9.9%	1.2%	11.1%
Zone C	20.2%	43.1%	63.3%
Totals	45.9%	54.1%	100.0%

Note (1) 427 on-street + 701 off-street = 1,128 municipal spaces
Note (2) 15 min., 30 min., 1 hr., and 2 hr. limits plus "reserved spaces"
Note (3) 10 hour meters and free or "no regulation" spaces

As indicated on the above chart, Northampton maintains a greater number of long-term parking spaces than short-term -- almost 10% more. Additionally, nearly two-thirds of all municipal parking spaces are located south of Main Street (Zone A).

Parking Lots - Private

As shown on Figure 1, there are 1,209 parking spaces in 56 private parking facilities located throughout the CBD. These private lots range in size from 2 to 90 parking spaces. The majority of these spaces (709 or 58.6%) lie above Main Street (Zone A) while 500 or 41.4% lie south of Main Street (Zone C).

Practical Capacity In Parking Facilities

In parking space use analysis, it is generally accepted that active parking facilities usually cannot operate at more than 90% of capacity over a period of time due to the constant in-flow and out-flow of cars. As a

result, 90% of capacity is generally accepted as "practical capacity" for an active existing parking facility or in the parking space capacity evaluation for a proposed parking facility.

The "practical capacities" for the various facilities have been calculated and are presented below:

	Zone A	Zone B	Zone C	Totals
On-Street Spaces	170	113	101	384
Municipal Lots	89	---	542	631
Private Lots*	723	---	450	1,173
Totals	982	113	1,093	2,188

*Includes County parking facilities.

As indicated above, the "practical capacity" of the 2,431 parking spaces in the CBD is actually 2,188 parking spaces. This is the total that will be used in various analyses in succeeding sections of this report.

3. ACCUMULATION COUNTS

Purpose of Accumulation Counts

An accumulation count is a continuous count of parked vehicles within a designated area, and produces valuable information on the occupancy of individual parking facilities (on-street and off-street) as well as the overall accumulation of parked cars within the central business district.

The primary objective of the accumulation counts was to determine the highest or "peak" accumulation of parked cars in the Northampton CBD. For this purpose, we conducted our field accumulation count studies on 3 weekdays and one weekend day:

- Tuesday, April 30, from 10 AM to 5 PM
- Wednesday, May 1, from 9 AM to 4 PM
- Thursday, May 9, from 2 PM to 9 PM
- Saturday, May 11, from 10 AM to 4 PM

Each accumulation count covered all 1,128 municipal parking spaces in the central business district. The results of these counts can be found graphically on Figure 2 (Total Cars Parked In Municipal Parking Spaces) and Figure 3 (Number of Cars Parked In On-Street Parking Spaces) -- these figures may be found on the following two pages.

Peak Accumulation Counts

- All Municipal Parking Spaces

As discussed earlier, the City of Northampton maintains 1,128 parking spaces --- 427 on-street and 701 off-street. Figure 2 reveals that, on weekdays, between the hours of 10:30 AM to about 3:00 PM, the municipal parking facilities, as a whole, are operating at a level above practical capacity.

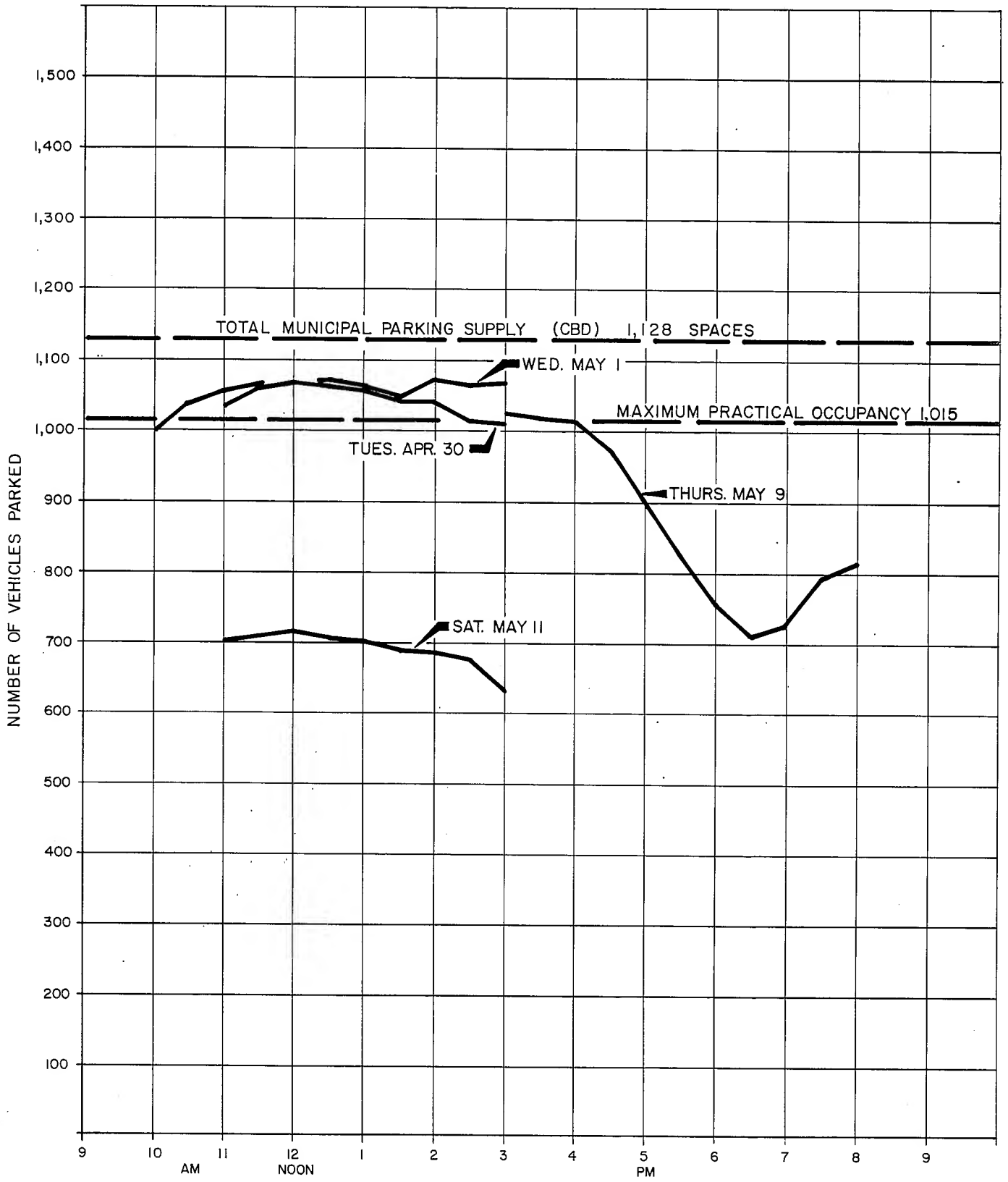

FIGURE 2

TOTAL CARS PARKED IN MUNICIPAL PARKING SPACES

CENTRAL BUSINESS DISTRICT

CITY OF NORTHAMPTON, MASSACHUSETTS

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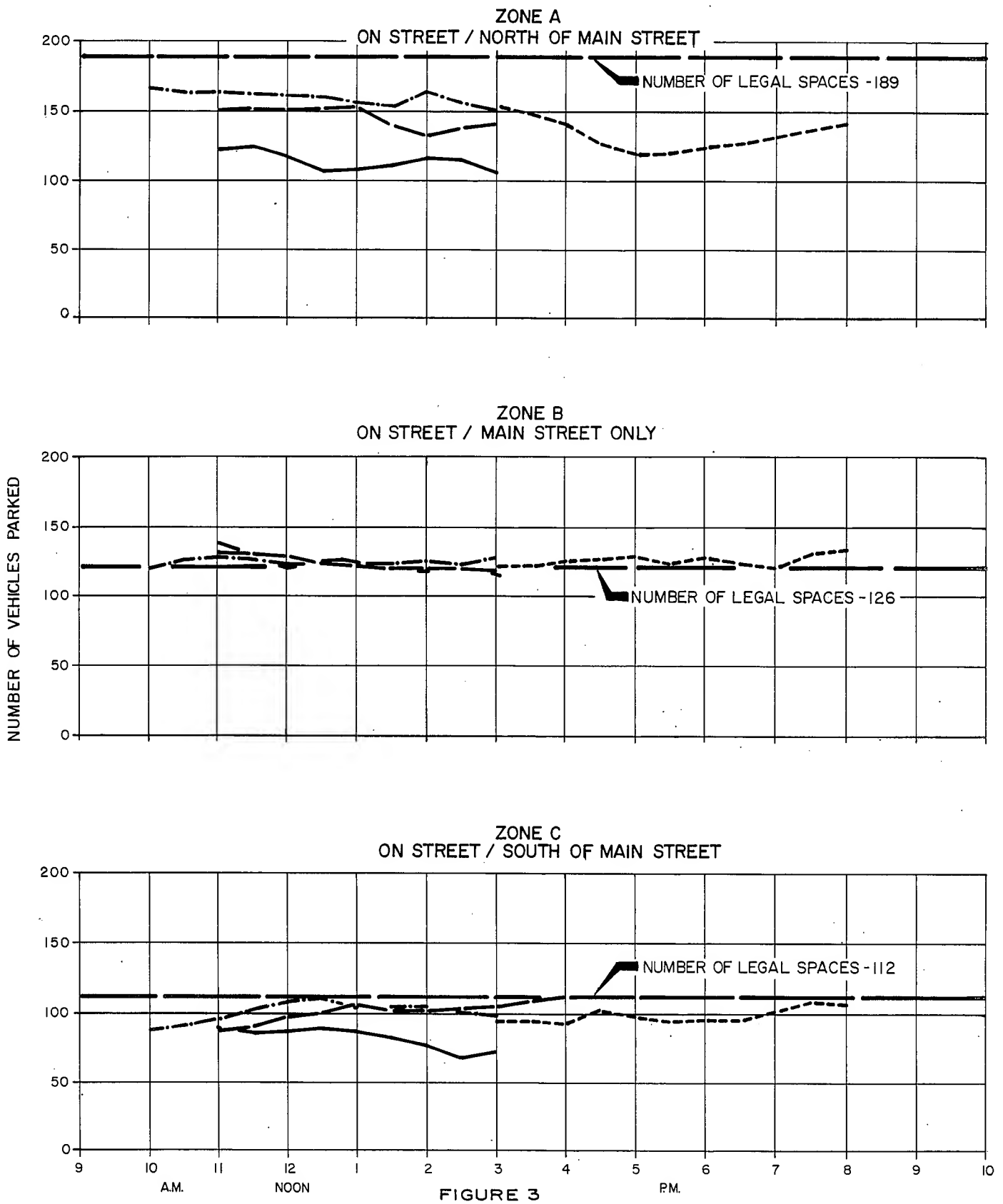

FIGURE 3

NUMBER OF CARS PARKED IN ON-STREET PARKING SPACES

CENTRAL BUSINESS DISTRICT

CITY OF NORTHAMPTON, MASSACHUSETTS

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MICHAEL A. DIMITRI P.E.

During these hours, capacities fluctuate from a peak of 1,071--95.0% occupancy (12:30 PM, Wednesday) to 1,009 (3:00 PM, Tuesday). After 4:00 PM occupancies dipped to about 700 cars parked at 6:30 PM as employees headed home. After 6:30 PM, however, occupancies began to increase as restaurant goers and shoppers (Thursday night is "shopping night") began to come into town. This increase peaks at about 8:00 PM and reaches 810 cars parked (71.8% occupancy).

On-Street Spaces - Peak Occupancies

Figure 3 presents the accumulations, by zones, of cars parked in on-street spaces only. Zone A, north of Main Street, contains those on-street parking spaces which are most remote from the core of the CBD -- Main Street. Consequently, it is the least densely parked of the three zones. The A.M. peak occurred at 10:00 AM on Wednesday found 166 cars parked in 189 parking spaces (87.8% occupancy), the P.M. peak (2:00 PM, Wednesday) found 165 cars parked (87.3% occupancy).

Zone B (Main Street only - 126 spaces) is the most heavily parked street in town. We found that these highly desirable, premium parking spaces were oversaturated at all times when we were conducting our survey. Throughout the entire study occupancies on Main Street ranged from 96.8% to 116.7%. It was a rare occasion, however, when occupancies dipped below 100%.

Zone C (south of Main Street - 112 spaces) hit peaks of 111 cars parked -- 99.1% occupancy (Wednesday, 12:30 PM), 113 cars parked -- 100.9% occupancy (Tuesday, 4:00 PM), and 108 cars parked -- 96.4% occupancy (Thursday, 7:30 PM). Throughout most of the weekdays, occupancies were above 90% (practical capacity).

Municipal Parking Lots - Peak Occupancies

Northampton maintains 701 parking spaces in 9 municipal off-street parking facilities. For the purposes of this discussion, we will only address the larger lots -- Armory Street (129 spaces), Strong Avenue (68 spaces), Roundhouse (181 spaces), Old South Street (80 spaces), Hampton Avenue (123 spaces) and Gothic Street (89 spaces). We found that all of these lots, at one time or another during our studies, reached practical capacity.

Our studies revealed that the total number of cars parked in all municipal parking lots was greater than 90% occupancy during the following time periods in our field surveys:

- Tuesday, between 11:00 AM and 3:00 PM
- Wednesday, between 10:30 AM and 3:00 PM
- Thursday, between 3:00 PM and 4:00 PM

The six major municipal parking facilities, the times they achieved practical capacity, and the average capacity during practical capacity are listed below:

Parking Facility	Peak Occupancy	Hours When Parked at Greater Than 90% Occupancy*	Average Occupancy While Parked Over 90% Occupancy
Armory Street Lot	100.8%	3:15 PM to 8:00 PM	93.6%
Strong Avenue Lot	104.4%	10:00 AM to 7:30 PM	96.5%
Roundhouse Lot	85.6%	Never Reached 90%	85.6%%**
Old South St. Lot	114.2%	10:00 AM to 5:00 PM	100.4%
Hampton Ave. Lot	100.8%	10:00 AM to 4:00 PM	97.5%
Gothic Street Lot	111.2%	9:45 AM to 4:15 PM	101.2%

* Average Weekday Conditions
** Highest Occupancy Achieved Between 12:00 Noon and 1:15 PM

As we can see from the previous analysis, the six major municipal parking lots each behave differently as they serve different uses.

- The Armory Street Lot is the major shoppers' parking lot in Northampton. Although heavily parked throughout the afternoon - 90% occupancy was not achieved until 3:15 PM, however, it remained over 90% until 8:00 PM as evening shoppers and diners came to town.

- The Strong Avenue Lot serves many all-day, railroad station parkers. Accordingly, occupancy remained at over 90% throughout most of the day.

- The Roundhouse Lot is the largest of all the municipal parking lots. Serving mostly City Hall and Municipal Building employees and business, it never reached 90% occupancy during our studies. Parking spaces at the far end of the facility (near New South Street) remained vacant throughout much of the day while parking areas at the opposite end (near the Bus Depot Building) were very much in demand.

- The Old South Street Lot, we found, was the most heavily parked of the long-term lots (average of 100.4% occupancy while parked over 90%). The reason for this "oversaturation" is that many parkers found areas of the lot to park in which were not "striped-out" as parking spaces. Furthermore, we found that this also serves as a "carpool" lot for commuters who work in Springfield -- groups of people meet at the lot and get into one car while leaving their own cars at the Old South Street Lot.

- The Hampton Avenue Lot serves mostly all day parkers -- it was occupied at 97.5% throughout most of the day with parked cars of mostly employees who work in the Northampton CBD.

- The Gothic Street Lot serves mostly the County Courthouse, the Police Station, and the Northampton Institute for Savings. Again, as evidenced from the 101.2% Occupancy Average, cars tended to "make their own" parking spaces by parking in unstriped areas. Also, at times, many spaces in this lot are reserved for jurors with the use of meter bags. All in all, however, there remains a high demand for parking spaces here.

Vacant Space Observations

We found that, throughout the hours of about 10:00 AM and 3:00 PM on a typical weekday, there were between 60 and 80 vacant municipal parking spaces in the CBD -- this represents about 6.2% of the total number of spaces which the City of Northampton maintains. We've determined that these vacant spaces are commonly located in the same areas -- on State Street, north of Center Street; on Trumbull Road; on Gothic Street, between Allen and Trumbull; the westernmost area of the Roundhouse Lot; and the easternmost areas of Strong Avenue.

4. PARKER'S WALKING DISTANCE

Parker Interviews

The field parking studies included 200 interviews with parkers at selected municipal parking lots. The purpose of these interviews was to determine parkers' destinations after they had parked their cars, and to measure the distances walked from parking location to destination. The walking distance was measured from the center of the parking lot to the front door (or in some cases, the back door) of the parkers' destination by the shortest pedestrian route.

The most critical walking distance is the distance short-duration parkers are willing to walk from parking location to destination. Long-duration parkers are usually workers who will walk longer distances if they have to because they have to. However, short-duration parkers must be satisfied if the City is to continue to receive the business and activity these parkers generate. Therefore, the acceptable walking distance limit for short-duration parkers is an important factor in evaluating the area served by existing municipal parking facilities or the area that would be served by any new municipal parking facility.

For this reason, we conducted the parker interviews at two "short-term" parking lots -- the Armory Street lot and the Gothic Street lot. For comparative purposes, we also conducted parker interviews at the Hampton Avenue, the Old South Street and Roundhouse parking lots.

The interviews at the "short-term" metered municipal parking facilities yielded the following results:

Walking Distance	Armory St. Lot % of Interview	Gothic St. Lot % of Interview	Summary % of Total
0' - 100'	--	16.7%	3.6%
101' - 200'	36.4%	--	28.6%
201' - 300'	1.5%	44.4%	10.7%
301' - 400'	6.1%	--	4.8%
401' - 500'	12.1%	38.9%	17.8%
501' - 600'	12.1%	--	9.5%
601' - 700'	13.7%	--	10.7%
701' - 800'	9.1%	--	7.1%
801' - 900'	4.5%	--	3.6%
901' -1000'	4.5%	--	3.6%
1000'+	--	--	--

Interviews at the "long-term" free municipal parking facilities breakdown as follows:

Walking Distance	Roundhouse Lot % of Interview	Old South St. Lot % of Interview	Hampton Ave. Lot % of Interview	Summary % of Total
0' - 100'	--	12.8%	--	4.3%
101' - 200'	--	--	8.0%	1.7%
201' - 300'	21.2%	--	--	9.5%
301' - 400'	25.0%	25.6%	--	19.8%
401' - 500'	--	7.7%	4.0%	3.5%
501' - 600'	34.6%	2.6%	4.0%	17.2%
601' - 700'	3.8%	7.7%	4.0%	5.2%
701' - 800'	9.7%	2.6%	36.0%	12.9%
801' - 900'	--	23.0%	20.0%	12.1%
901' -1000'	1.9%	2.6%	4.0%	2.6%
1000'+	3.8%	15.4%	20.0%	11.2%

The preceding analyses depict how various municipal parking lots have varying service areas. In general, it is seen that parkers located in "long-term" free spaces are willing to walk farther than those in "short-term" spaces. This is quite understandable because, (a) they want to save money and (b) these are actually the only practical spaces available to them.

Those wishing to park closer to their destination for a long-term stint must engage in "meter feeding" -- a practice which we observed to be present in Northampton, but not prevalent. Therefore, it is common to find walking distances in excess of 1000' for long-term parkers as we found in each of the long-term parking lots in Northampton. Combined, we found that 11.2% of all long-term parkers walk distances greater than 1000' to their destinations.

For establishing acceptable walking distances limits for short-duration parkers we use the 90-percentile:

Armory Street Lot	90% walked 700' or less
Gothic Street Lot	90% walked 400' or less

Overall, we found that, for short-duration parkers, the 90-percentile was 700' or less. However, it is important to note that of those 90%, 65.5% walked just 500' or less. This suggests that the short-term spaces are situated in fairly good locations.

5. CURRENT PARKING SPACE DEFICIENCY

Method of Analysis

Parking space deficiency is based on conditions existing at the peak count of parked cars in each individual parking facility. The analysis compares the demand for parking spaces and the supply of parking spaces (practical capacity) for each parking facility -- on-street and off-street -- in the central business district. If the demand exceeds the supply, there is a deficiency of parking spaces, and the arithmetic will show the size of the deficiency.

This analysis is based on the premise that the goal is to accommodate all parkers with a destination in one zone, in parking spaces located within a facility in that same zone. Therefore, this analysis emphasizes convenience in parking location and shows the distribution of parking spaces necessary to accomplish this purpose.

This analysis is also based on "practical capacity" of parking spaces which, in theory, would result in no parking facility occupied in excess of 90% capacity at any time.

As a result, this method of analysis develops the parking space capacity needed in each zone and each facility in the central business district to insure adequate parking space capacity, convenience in parking location, and ease of entry to and exit from the various parking facilities -- existing or planned.

Note that we are referring to a current parking space deficiency that may occur at the peak accumulation of parked cars on an average weekday in the Spring of 1985. Peak seasonal parking space requirements, and the effect of growth trends, proposed/slated development, and additional "dissatisfied" parker demand (1) are additional considerations and calculations that would be applied to modify the current parking space deficiency.

Deficiency Analysis

The following chart analyzes parking space deficiencies by facility and by zone:

Facility	Existing Capacity	Occupancy at Peak	Car Parked at Peak	Additional Spaces Required to Achieve 90% Capacity at Peak
On-Street/Zone A	189	87.8%	166	0
On-Street/Zone B	126	116.7%	147	38
On-Street/Zone C	112	100.9%	113	14
Armory Street Lot	129	100.8%	130	16
Strong Avenue Lot	68	104.4%	71	11
Roundhouse Lot	181	85.6%	155	0
Old South St. Lot	106*	114.2%	121	29
Hampton Ave. Lot	123	100.8%	124	15
Gothic St. Lot	89	111.2%	99	21
Balance of Off-Street	31	109.7%	34	7
				151

*Includes 26 private spaces at south end of lot

Note 1: Anytime when a CBD is extremely congested, as is Northampton, there are certain individuals who will drive elsewhere to look for a product because they don't want to bother with the aggravation of trying to find a parking space. We term these individuals "dissatisfied" parkers.

Areas of Deficiency

Our quantitative analysis yields a current parking space deficiency in the Northampton CBD of 151 parking spaces. Because of the existing operation of the system, which includes many free parking spaces, it is difficult to pinpoint where the deficiencies lie as a result of occupancy counts because, naturally, people are willing to walk a little farther in order to park free all day. It should also be noted that the free municipal parking spaces in Northampton are really quite conveniently located parking spaces which serve the CBD area very well as far as walking distance service areas. Nevertheless, after analyzing our destination data, it was apparent that the majority of those individuals interviewed had destinations along the south side of Main Street, between Old South Street and Pleasant Street. Considering the City's existing array of parking facilities within the CBD, it would appear that the Armory Street Parking Lot is the most likely candidate for expansion to provide this additional parking.

Adjustments to Parking Space Deficiency

We have "built-in" to our deficiency analysis a seasonal adjustment. That is, we have used the peaks at each facility regardless of what time of the day those peaks have occurred -- this is factual evidence that this particular parking facility does achieve this level of occupancy. Therefore, we assume that the combined total of actual peak counts of cars parked in each parking facility, whatever time of day it occurred, is a reasonable measure of the parking demand at seasonal peaks. Consequently, no seasonal adjustments will be made to the deficiency.

-Additions to Deficiency:

Scheduled new development in the CBD, "dissatisfied" parker demand, and

growth trends are three factors which must be considered when determining the magnitude of the new project. Through close contact with Northampton officials and past experience, we have determined that these additions to our current deficiency are as follows:

- Scheduled New Development:

  Post Office renovations and additional 20,000 S.F. of commercial area on 2 new floors

  - @ 3.5 spaces per 1,000 S.F. = **Add 70 spaces**

- "Dissatisfied" Parker Demand:

  We estimate this to be about 9% of the municipal parking supply

  - 1,128 spaces x 9% = **Add 102 spaces**

- Growth Trends/Safety Factor:

  We estimate for a City the size of Northampton, being in an historic district, etc. -- about 6%

  - 1,128 spaces x 6% = **Add 68 spaces**

-Subtraction from Deficiency:

The following factors will provide additional parking spaces in the Northampton CBD and will, therefore, serve as subtractions from the current deficiency:

- Development of Railroad Station Area:

  178 new parking spaces will be part of the development of the Railroad Station area -- 100 of these will be available to the City for long-term use from 1:00 AM to 6:00 PM

  - Subtract 100 spaces

- Masonic Street Parking Lot:

  Improvements to the Masonic Street Parking Lot (short term spaces) are due for completion in Fall '85.

  - Subtract 55 spaces

Adjusted Parking Space Deficiency - Northampton CBD

Adjustments to the current parking space deficiency yield a total deficiency of 236 parking spaces in the Northampton CBD:

Current Parking Space Deficiency	-	151 spaces
Additions to Deficiency:		
- Slated New Development	-	70 spaces
- "Dissatisfied" Parker Influx	-	102 spaces
- Growth Trends/Safety Factor	-	68 spaces
Subtractions from Deficiency:		
- Railroad Station Development	-	(100 spaces)
- Masonic Street Re-opening	-	(55 spaces)
TOTAL DEFICIENCY	-	**236 spaces**

6. RECOMMENDED PARKING PROGRAM PLANS

We have established, in the preceding sections of this report, that the Northampton CBD is deficient by 236 parking spaces. We have further established that the most practical location for providing this additional parking is the Armory Street Lot area.

Program Plan - Alternative A

The recommended plan for developing the additional parking is shown in Figure 4 -- Development of Armory Street Lot Site - Alternative A (next page). This plan hinges entirely upon the aquisition of the adjacent property ("Stan-Dick Site").

Because of the displacement of existing parking spaces and the addition of a retail area, this plan incorporates 513 new parking spaces. The following summary details how the parking space requirements are determined and how they are met:

Parking Spaces Required		Parking Spaces Provided Alternative A	
- Existing Deficiency	236	Ground Parking Lot Spaces	126
- Loss of Armory St. Lot	129	Parking Garage - Grade	80
- Loss of Stan-Dick Lot	70 (est.)	4 Typical Levels	258
- Additional Retail*	50	Roof Level	49
TOTAL	485	TOTAL	513

*Approximately 16,000 S.F.

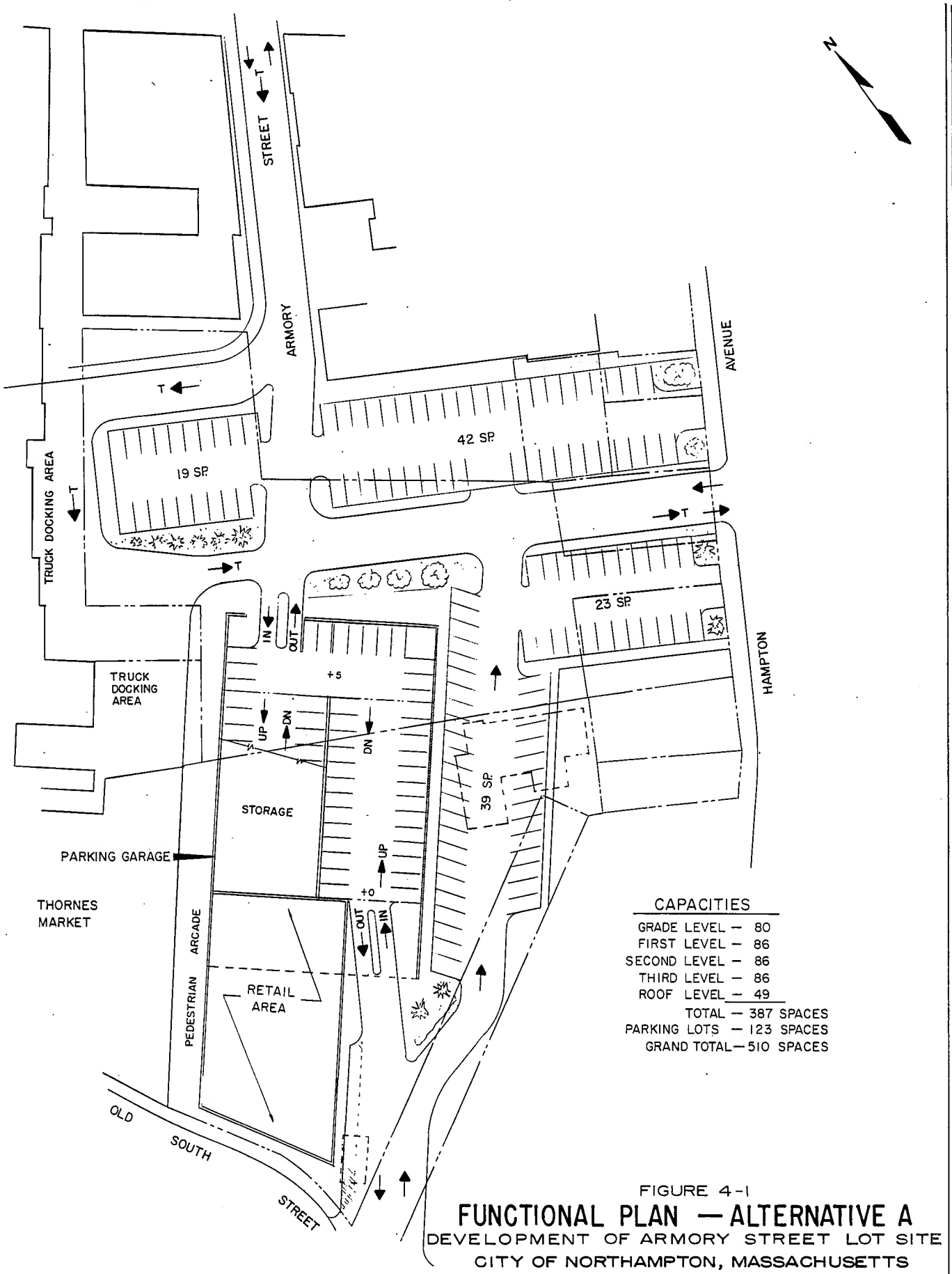


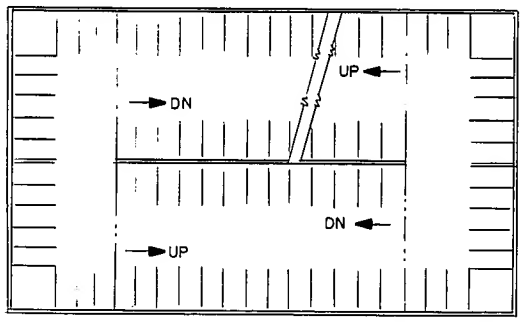
FIGURE 4-1

FUNCTIONAL PLAN — ALTERNATIVE A

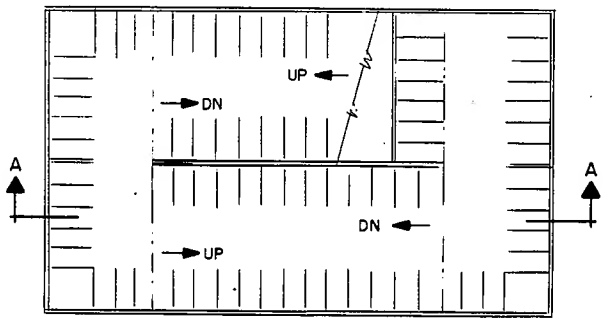
DEVELOPMENT OF ARMORY STREET LOT SITE

CITY OF NORTHAMPTON, MASSACHUSETTS

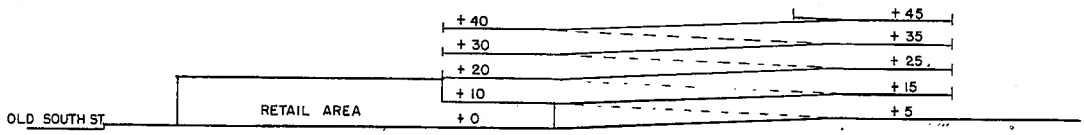
RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS
1610 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL S. DIMITRI, P.E.



TYPICAL LEVEL



ROOF LEVEL



SECTION A-A

FIGURE 4-2

FUNCTIONAL PLAN — ALTERNATIVE A

DEVELOPMENT OF ARMORY STREET LOT SITE

CITY OF NORTHAMPTON, MASSACHUSETTS

20 0 20 40 60 80

SCALE IN FEET

RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS
1010 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL S. DIMITRI, P.E.

As indicated on Figure 4, the parking supply is provided in 3 separate ground parking facilities (capacities of 19, 43 and 64 parking spaces) and one sloping floor parking garage (capacity of 387 parking spaces). The parking garage has two separate entrance/exit points -- one at each end of the structure. Access to the garage can be achieved via Old South Street, Hampton Avenue or Pleasant Street. The "sloping floor" design of the garage is extremely efficient -- the gently sloping floors (4.2% slope) serve as the driving aisles, the parking areas, and the means of vertical transportation. An uncomplicated functional plan, parkers will be led easily to and from parking spaces. Clear-span construction with a minimum of interior columns provides for an open, airy feeling inside the structure. Contributing to this "open" feeling is open-wall construction and glass wall elevators and stairtowers -- these further serve as security factors.

A retail area has been provided at the west end of the site. This area (approximately 16,000 S.F.) will have frontage on Old South Street. A pedestrian "arcade" is situated between the retail/parking garage and Thornes Market. In order to extend the retail area along the pedestrian arcade, a section of the retail will be located beneath the first supported level of the parking garage.

In regard to delivery vehicles' access to the rears of stores fronting on Main Street, a generous, one-way truck access/docking area has been provided. Trucks are encouraged to enter via Pleasant Avenue and exit via Hampton Avenue.

In addition to the pedestrian arcade mentioned earlier, possibilities exist of providing an internal pedestrian penetration through a portion of Main Street retail from the second level of the parking garage to Main Street. The advantages of this include:

- Increased pedestrian circulation and safety.
- Shortening of walking distances.
- Greater visibility and access to retail establishments.

The location of this walkway has not been negotiated, however, several possible locations exist.

If the City encounters problems in acquiring key parcels of land or wishes to explore alternative solutions to providing additional parking spaces at the Armory Street Lot site, we have developed two additional plans which will satisfy the calculated parking demands -- Alternative B and Alternative C which are presently on the following two pages.

Program Plan - Alternative B

As shown in Figure 5, Alternative B attempts to contain the development of new parking within the existing boundaries of the Armory Street Lot as much as possible. The only takings that would be necessary in order for this plan to work would be the 30 or 40 foot strip in the northernmost area of the StanDick site running from the Armory Street Lot to Old South Street and the McColgan-Kamanski site.

Being the most straightforward approach to provide additional parking, Alternative B simply situates a parking garage with a capacity of 417 cars on the site of the present parking lot. The parking garage would be a 2-unit, sloping floor design (as discussed earlier in this section). Truck ingress and egress has been provided and cars may enter from Hampton Avenue or Pleasant Street and exit to Hampton Avenue or Old South Street. The internal pedestrian penetration remains a possibility on this plan. Furthermore, there are two areas which may serve as areas for possible commercial development on the site and they are shown on Figure 5.

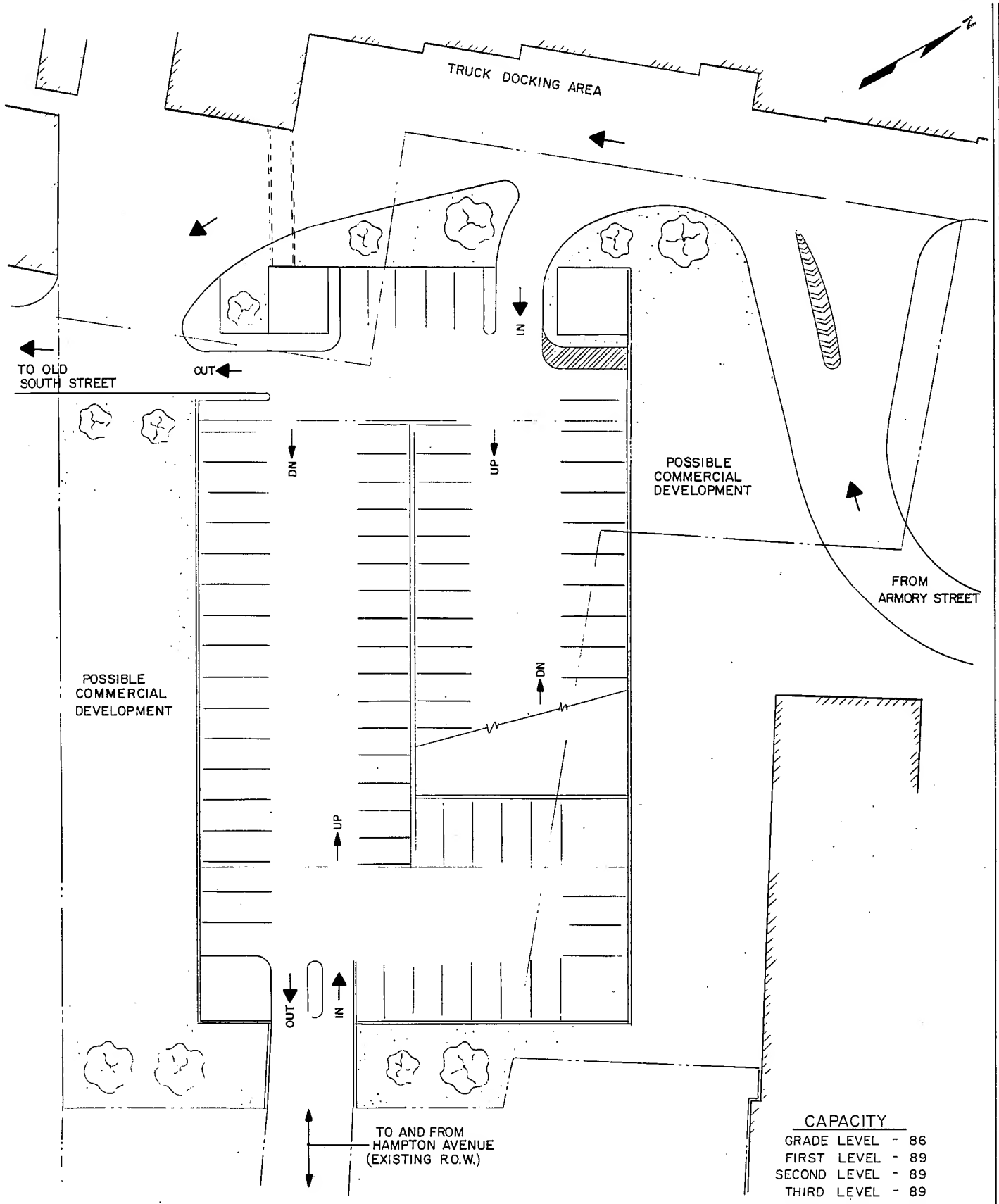


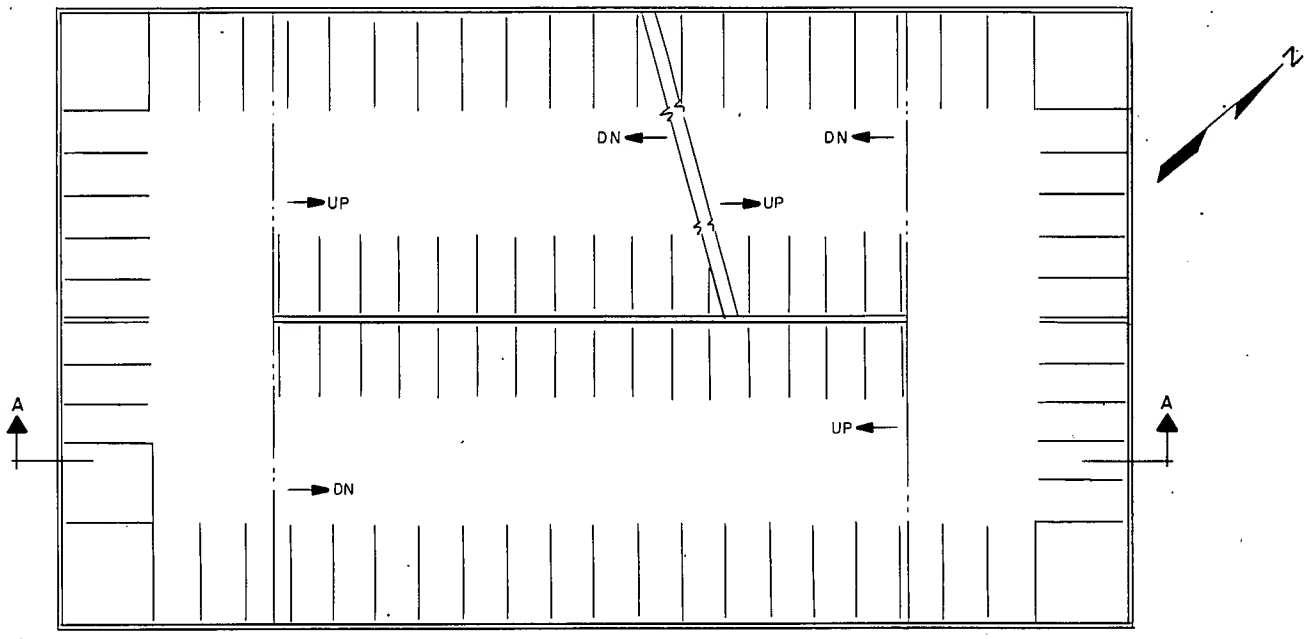
FIGURE 5-1

FUNCTIONAL PLAN — ALTERNATIVE B

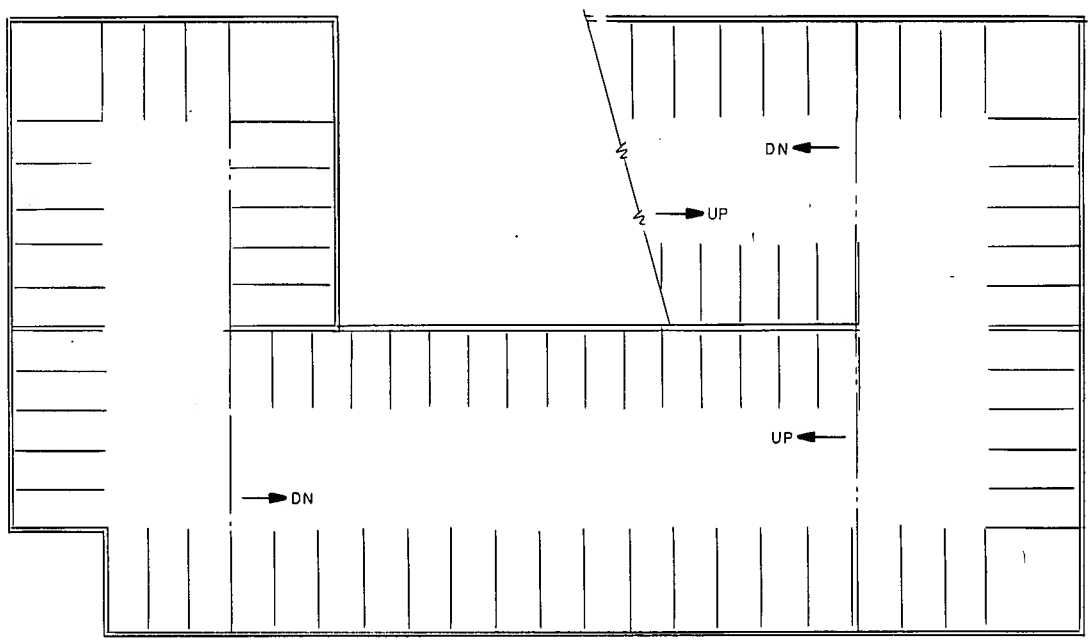
DEVELOPMENT OF ARMORY STREET LOT SITE

CITY OF NORTHAMPTON, MASSACHUSETTS

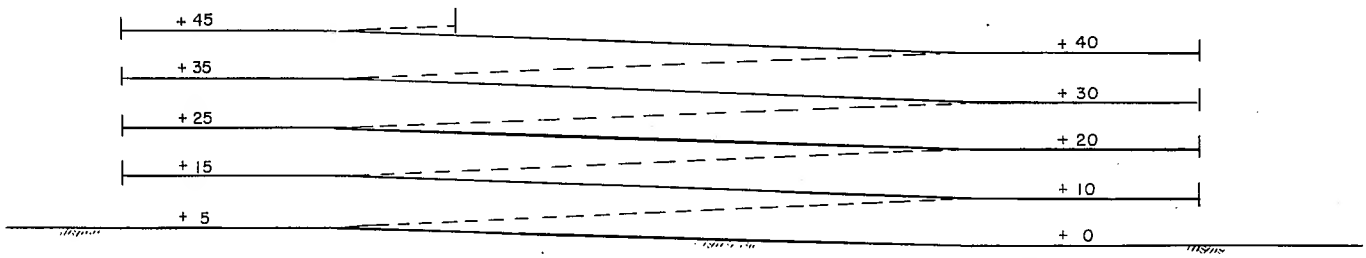
RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS
1612 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL A. DIMITRI, P.E.



TYPICAL LEVEL



ROOF LEVEL



SECTION A-A

FIGURE 5-2

FUNCTIONAL PLAN — ALTERNATIVE B

DEVELOPMENT OF ARMORY STREET LOT SITE

CITY OF NORTHAMPTON, MASSACHUSETTS

0 20 40

SCALE IN FEET

RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS
1515 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL A. SMIRTEL, P.E.

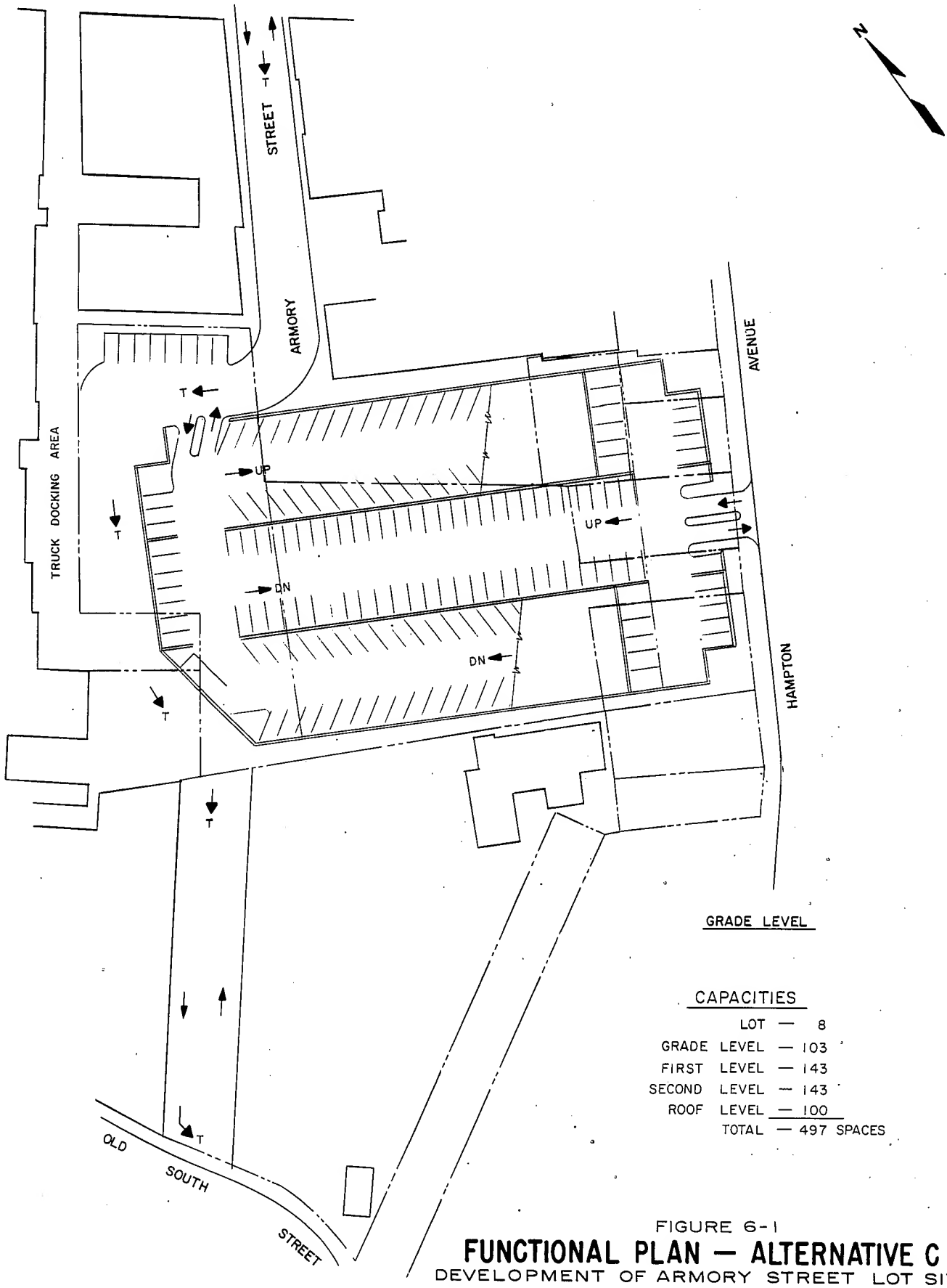


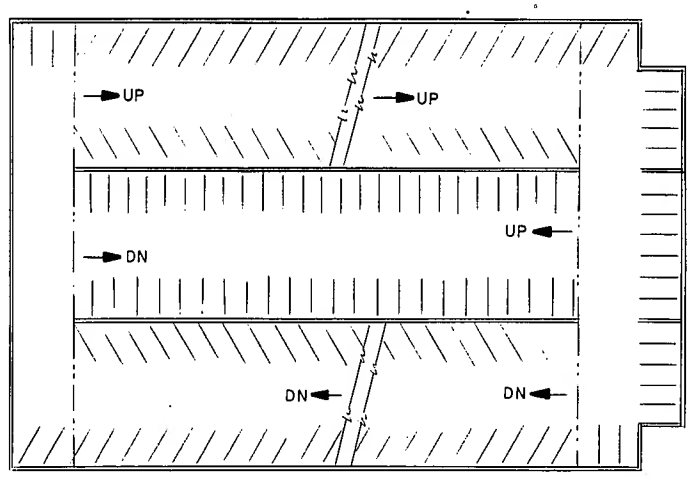
FIGURE 6-1

FUNCTIONAL PLAN — ALTERNATIVE C

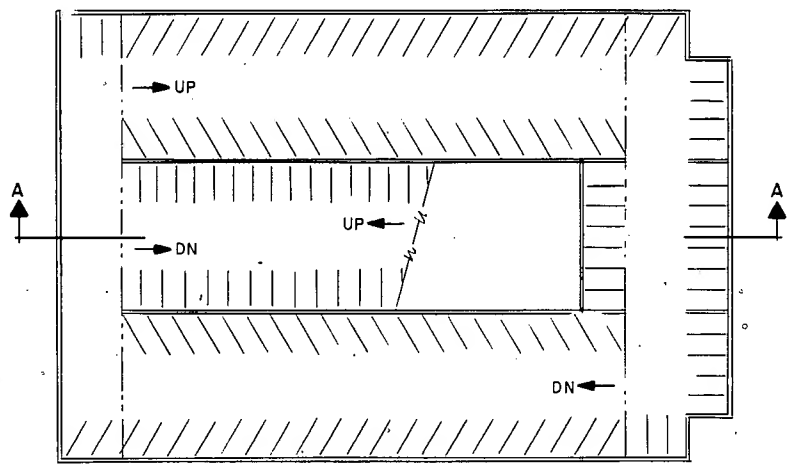
DEVELOPMENT OF ARMORY STREET LOT SITE

CITY OF NORTHAMPTON, MASSACHUSETTS

RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS
1819 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL G. SMITH, P.E.



TYPICAL LEVEL



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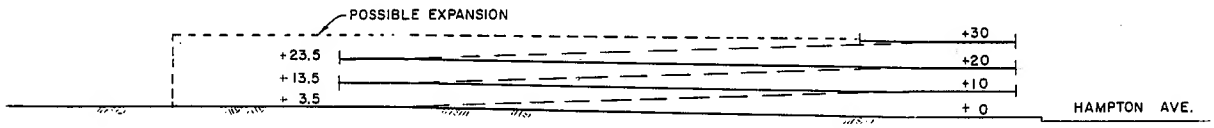


SECTION A-A

FIGURE 6-2

FUNCTIONAL PLAN — ALTERNATIVE C

DEVELOPMENT OF ARMORY STREET LOT SITE

CITY OF NORTHAMPTON MASSACHUSETTS

20 0 20 40 60 80

SCALE IN FEET

RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS
1010 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL A. DIMITRI, P.E.

Program Plan - Alternative C

As seen on Figure 6, Alternative C takes a similar approach to developing additional parking on the site. The parking garage, however, is lower, wider and longer. Because of the additional length and width, Alternative C requires additional property takings -- particularly, the McColgan-Kamanski Site, the Herbert Site, and four small, separate Armory Realty sites. As was the case in Alternative B, the 30-40 foot strip of the Stan-Dick site is needed for circulation in Alternative C.

7. PARKING SYSTEM OPERATIONS

In a report titled "Proposed Plan For Downtown Parking" (Parking Management Plan), dated November 7, 1984, Mr. Gene Bunnell, Director of Planning and Development for the City, details a parking rate structure and overall management program for the parking system in Northampton. As part of our assignment, we reviewed the plan and reacted to it in a letter dated May 21, 1985. This letter can be found in Appendix A, it recapitulates the management plan and suggests only minor revisions to it. We found the Parking Management Plan to be well thought out and very practical -- we agreed, in principal, with the theories of tiered "classes" of parking and suggested only minor variations in the fee structure.

In Figure 7, "Proposed Parking Operations Program" (page 39), we have depicted the Northampton CBD with existing and proposed parking facilities and coded them to reflect the management plan. In summary, the operation of municipal parking spaces in the Northampton CBD, as per the management plan and our recommendations, will be as follows:

CLASS 1-A PARKING SPACES

Rate:	25¢ per hour	
Time Limit :	1 hour maximum	
Locations:	High demand On-Street Meters	- (254 Spaces)
	Off-Street/behind City Hall	- (6 Spaces)
Total Spaces:	260	

CLASS 1-B PARKING SPACES

Rate:	25¢ per hour	
Time Limit:	2 hour maximum	
Locations:	Masonic Street Parking Lot	- (55 Spaces)
	Armory Lot Re-Development	- (475 Spaces - est.)
Total Spaces:	530 (estimated)	

CLASS 2-A PARKING SPACES

Rate: 10¢ per hour
Time Limit: 1 hour maximum
Location: State Street

Total Spaces: 27

CLASS 2-B PARKING SPACES

Rate: 10¢ per hour
Time Limit: 2 hour maximum
Locations:

Remaining CBD On-Street Spaces	- (40 Spaces)
Strong Avenue Lot	- (68 Spaces)
Gothic Street Lot	- (89 Spaces)
Roundhouse Lot (front 2 aisles only	- (46 Spaces)
Old South Street "cut-out"	- (7 Spaces)

Total Spaces: 250

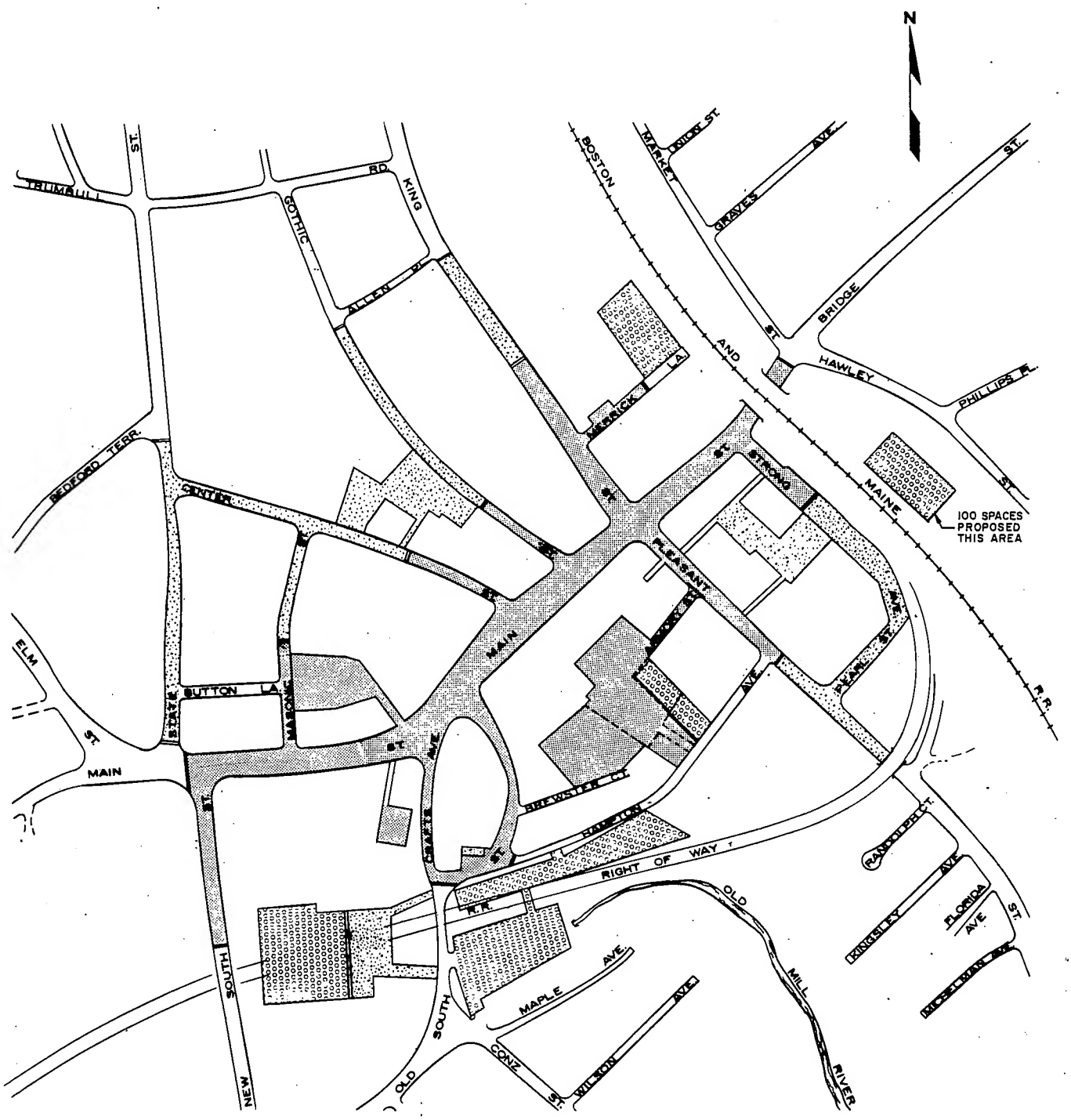
CLASS 3 PARKING SPACES (LONG TERM)

Rate: 5¢ per hour/$10 per month
Time Limit: 24 hour maximum
Locations:

Hampton Avenue Lot	- (123 Spaces)
Old South Street Lot	- (80 Spaces)
Roundhouse Lot (remaining spaces)	- (135 Spaces)
Armory Lot Re-development (near Carryouts)	- (45 Spaces)
County Lot (behind Registry of Deeds)	- (82 Spaces)
Railroad Lot (Proposed)	- (100 Spaces)

Total Spaces: 565

The proposed parking operations plan will maintain 1,632 revenue-generating parking spaces. Currently, the City of Northampton is maintaining just 669 revenue generating CBD parking spaces -- 336 on-street and 333 off-street. The proposed additional revenue-generating parking spaces numbers 936 -- a dramatic 144% increase over existing.



KEY

- CLASS 1, 25¢/HR, SHORT TERM
- CLASS 2, 10¢/HR, SHORT TERM
- CLASS 3, 5¢/HR OR $10/MO LONG TERM

FIGURE 7

PROPOSED PARKING OPERATIONS PROGRAM

CENTRAL BUSINESS DISTRICT
CITY OF NORTHAMPTON, MASSACHUSETTS

200 0 200 400
SCALE IN FEET

RAMP ENGINEERING ASSOCIATES
CONSULTING ENGINEERS AND DESIGNERS

8. ECONOMIC CONSIDERATIONS

Generated Revenue Estimate From Parking

We have estimated that the 669 parking spaces which are currently generating income in the Northampton CBD are averaging 6.3 paid hours per day -- a very high average which reflects the current stressful parking situation. The parking spaces also average an hourly income of 5.7¢. These numbers are based on the fiscal year 1984 revenue totals from parking. For information's sake, the existing parking system performs as outlined below:

- Annual Net Revenue (FY 1984) - $74,780.00
- Average Income/Space/Year (FY 1984) - $111.78
- Average Income/Space/Day (FY 1984) - 36¢

In order to estimate what the generated revenue will be after implementation of the proposed parking management plan, we need to update the factors which are referred to above. Under the proposed plan, the City will maintain 1,632 revenue-generating parking spaces. Because of the easing of the parking situation as a result of "transfer" parking coupled with the reduction in capacity to 90% in all parking facilities, we estimate that the paid hours per day per space will average about 13% less than the existing 6.3 or about 5.5 paid hours per day. Because of the increase in parking fees, the average hourly rate per parking space will jump from the existing 5.7¢ to about 15.5¢ per hour.

As a result of the new estimated factors, we can determine the estimated revenue to be generated from the proposed system:

(5.5 hrs./day) ($0.155) (1,632 Spaces) (313 days) = $435,470/year.

- Estimated Annual Income - $435,470.00
- Estimated Average Income/Space/Year - $266.83
- Estimated Average Income/Space/Day - 85¢

Estimated Income - Alternatives Only

As previously indicated, we are assuming the Armory Lot redevelopment to be essentially a short-term, shopper-oriented facility. These new parking spaces will fall under the Class 1-B category of parking spaces -- 25¢ per hour, 2 hour time limit. Based on 5.5 paid hours a day, we estimate that the three Alternatives will generate the following annual incomes:

- Alternative A

  (5.5 hrs./day) ($0.25) (515 spaces) (313 days) = $221,643/yr.

- Alternative B

  (5.5 hrs./day) ($0.25) (417 spaces) (313 days) = $179,466/yr.

- Alternative C

  (5.5 hrs./day) ($0.25) (497 spaces) (313 days) = $213,986/hr.

The above estimates are maximum income estimates which, we feel will not be achieved until sometime during the third full year of operation. We estimate that income in the first year of operation will be 70% of our estimate and 90% of our estimate in the second year:

ESTIMATED ANNUAL INCOME
ARMORY STREET LOT RE-DEVELOPMENT

	1st Year	2nd Year	3rd Year
Alternative A	$155,150	$199,479	$221,643
Alternative B	$125,626	$161,519	$179,466
Alternative C	$149,790	$192,587	$213,986

Income in the remaining facilities should be essentially the same, regardless of which alternative is built. We estimate this amount to be about $213,000/year.

Project Development - Capital Cost

We have estimated the total capital cost of the three proposed alternatives. This is presented in Table 1 (next page), Capital Cost Estimate - Development of Armory Street Lot. Information about the garages, developmental costs and average annual debt services are all included in the table.

TABLE 1
CAPITAL COST ESTIMATE
DEVELOPMENT OF ARMORY STREET LOT
NORTHAMPTON, MASSACHUSETTS

	Alternative A	Alternative B	Alternative C
Parking Garage Area (sq. ft.)	121,536	132,056	162,823
Commercial Area (sq. ft.)	16,000	--	--
Total Area (sq. ft.)	137,536	132,056	162,823
No. of Parking Spaces (Garage)	387	417	489
No. of Parking Spaces (Lots)	128	--	8
Garage Efficiency (1)	314 sf/sp	319 sf/sp	333 sf/sp
Developmental Cost			
1. Site Acquisition(s) (2)	$ 750,000	$ 50,000	$ 300,000
2. Surveys, Borings & Testing	20,000	20,000	20,000
3. Garage Construction (3)	2,674,000	2,905,000	3,582,000
4. Parking Lot(s) Construction (4)	167,000	--	11,000
5. Commercial Construction (5)	480,000	--	--
6. Pedestrian Skyway (6)	20,000	40,000	50,000
7. Passenger Elevators (7)	100,000	100,000	100,000
8. Signs & Landscaping	20,000	10,000	10,000
9. Parking Meters (8)	67,000	48,000	64,000
10. Design & Supervision Fees (9)	209,000	185,000	226,000
11. Contingency (5% ± all items)	225,000	168,000	218,000
Total Developmental Cost	$4,732,000	$3,526,000	$4,581,000
Other Costs			
Legal & Financing Expenses	$ 50,000	$ 50,000	$ 50,000
Total Capital Cost Estimate	$4,782,000	$3,576,000	$4,631,000
Average Annual Debt Service 9% for 30 years ($97.33/$1,000)	$ 465,432	$ 348,052	$ 450,735

REFERENCE NOTES - TABLE 1

(1) Parking Garage Area ÷ Parking Garage Spaces.

(2) Based on reports prepared by James Lumley, O'Conner Real Estate Associates and estimated current contingencies.

(3) Based on $22 per SF of garage construction.

(4) Based on $1,300 per parking space.

(5) Based on $30 per SF of commercial construction. Space to be enclosed, utility stubs only.

(6) Based on $1,000 per foot.

(7) Two at $50,000 each.

(8) Based on $200 per meter. Assumes re-using existing meters in Armory Street Lot and 50 permit spaces.

(9) Based on 6% of Developmental items 2 thru 8.

Operating Expense Estimates

As shown in the summary below, we estimate that the annual operating expense of a parking garage on the Armory Street Lot site would be based on an average annual cost of $57.00 per parking space:

Garage Utilities	$35.00 per space
Garage Insurance	$ 8.00 per space
Garage Maintenance	$ 5.00 per space
Meter Maintenance	$ 5.00 per space
Supplies & Miscellaneous	$ 4.00 per space
Total	$57.00 per space

In addition to this basic cost, all three of our proposed alternatives contain two passenger elevators. We estimate that the maintenance contracts for these two elevators will be $6,000 per year (based on $250/month for each elevator).

Also, regarding Alternative A, which includes commercial area, we are assuming that the tenant will be responsible for all insurance and utility expenses.

As a result, we estimate that the first year operating expense for the proposed alternatives would be:

- Alternative A ($57.00 x 387) + $6,000 $28,000
- Alternative B ($57.00 x 417) + $6,000 $30,000
- Alternative C ($57.00 x 489) + $6,000 $34,000

A reasonable escalation in annual operating expense would be 5% per year. Therefore, our annual operating expense estimates for the proposed alternative for the first three years of operation are:

	GARAGE OPERATION		
	1st Year	2nd Year	3rd Year
Alternative A	$28,000	$29,400	$30,900
Alternative B	$30,000	$31,500	$33,000
Alternative C	$34,000	$35,700	$37,500

If a "Utility Man" is deemed necessary, the additional cost for one man (40 hours per week) plus payroll taxes and benefits would be approximately $20,000 per year.

9. ESTIMATED FINANCIAL SUMMARY

Alternative A

The income and operating expense estimates for Alternative A have been summarized below and compared with the estimated annual debt service cost for Alternative A:

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Annual Income Estimate	--	$155,150	$199,479	$221,643
Commercial Rent Income	--	$160,000	$160,000	$160,000
Total Income Estimate	--	$315,150	$359,479	$381,643
Average Annual Debt Service	$465,432	$465,432	$465,432	$465,432
Annual Operating Expense	--	$ 28,000	$ 29,400	$ 30,900
Total Annual Cost	($465,432)	($493,432)	($494,832)	($496,332)
Deficit	$465,432	$178,282	$135,355	$114,689

Alternative B

The income and operating expense estimates for Alternative B have been summarized below and compared with the estimated annual debt service for Alternative B:

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Annual Income Estimate	--	$125,626	$161,519	$179,466
Average Annual Debt Service	$348,052	$348,052	$348,052	$348,052
Annual Operating Expenses	--	$ 30,000	$ 31,500	$ 33,000
Total Annual Cost	($348,052)	($378,052)	($379,552)	($381,052)
Deficit	$348,052	$252,426	$218,033	$201,586

Alternative C

The income and operating expense estimates for Alternative C have been summaried below and compared with the estimated annual debt service for Alternative C:

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Annual Income Estimate	--	$149,790	$192,587	$213,986
Average Annual Debt Service	$450,735	$450,735	$450,735	$450,735
Annual Operating Expense	--	$ 34,000	$ 35,700	$ 37,500
Total Annual Cost	($450,735)	($484,735)	($486,435)	($488,235)
Deficit	$450,735	$334,945	$293,848	$274,249

Net Income

As shown in the preceding summaries, none of the proposed projects even come close to being self-liquidating. However, when supported by the estimated income from the remaining parking facilities ($213,000 per year), the financial picture would be as follows:

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Alternative A:				
Deficit	$465,432	$178,282	$135,355	$114,689
Income-Remaining Facilities	$213,000	$213,000	$213,000	$213,000
Surplus or (Deficit)	($252,432)	$ 34,718	$ 77,645	$ 98,311
Alternative B:				
Deficit	$348,052	$252,426	$218,033	$201,586
Income-Remaining Facilities	$213,000	$213,000	$213,000	$213,000
Surplus or (Deficit)	($135,052)	($ 39,426)	($ 5,033)	$ 11,414
Alternative C:				
Deficit	$450,735	$334,945	$293,848	$274,249
Income-Remaining Facilities	$213,000	$213,000	$213,000	$213,000
Surplus or (Deficit)	($237,735)	($121,945)	($ 80,848)	($ 61,249)

Discussion - Financing

As shown in the summaries on the previous page, we have assumed that the City general obligation bond issue needed to finance the parking garage project would be sold just after the construction bids have been taken and prior to the start of construction. This approach presents two problems:

1) This approach assumes that the City would cover all preliminary project costs (design fee, test borings, legal fees, etc.) from City funds, and would recover these funds from the proceeds of the bond issue.

2) This approach would require payment of a full year's debt service during the construction period with no offsetting revenue from the project.

In our opinion, it would be less expensive if the City were to use temporary financing to cover the estimated total project cost, and then issue the bonds at the completion of construction. In this way, the debt service payments up to the opening of the garage and prior to permanent financing would consist of interest payments only. Since short term interest rates are presently somewhat lower than long term rates this is estimated to be in the 6% to 7% range.

Discussion - Commercial Space in Parking Garage

Comparison of the annual deficits for the three alternatives reveals the advantage of including rentable commercial space in a municipal garage project. Alternative A is the only plan out of the three alternatives which incorporates commercial space in its analysis (although commercial areas may be included in Alternatives B & C if deemed necessary). Note that the combined deficit for the first three years of operation of Alternative A is

$428,326 -- as compared with $672,045 for Alternative B and $903,042 for Alternative C. Also note that, regarding net incomes, Alternative A shows a surplus income in the first year of operation, Alternative B doesn't show a surplus until the third year of operation and Alternative C will always be in the red (provided no additional funding is aquired).

We point out that we are not real estate experts, and therefore we cannot judge whether or not the Northampton CBD needs an additional 16,000 square feet of commercial space. What we are saying is that if there is a market for an additional 16,000 square feet of commercial, it would be a good plan to include it in the municipal parking garage project and use the rent income to reduce the annual deficit for this project.

Discussion - Alternate Funding

The prior financial summaries have been presented with the assumption that the entire cost of the project would be a debt obligation of the City of Northampton. This is the most conservative financial picture.

We believe that the project would qualify for current Commonwealth of Massachusetts parking facility financing assistance. This program could provide a 70% grant for all project related costs. The municipality would have to match this grant with the remaining cost of the project. Thus the debt service obligation to the City of Northampton would be only for the City cost share of the project.

We have therefore restated the financial summaries for Alternative A, B & C with a revised debt service requirement. All other assumptions and estimates for parking income and operating expenses remain unchanged.

For the purpose of this revised debt service calculation we have used a figure which amounts to 30% of the previously stated debt service calculation for garage-related construction costs only, plus approximately $3500 to cover the City share of an estimated $100,000 access roadway improvements. Alternative A further includes 100% City financing to cover the construction costs of the commercial area.

Revised Financial Summary - Alternative A

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Annual Income Estimate	--	$155,150	$199,479	$221,643
Commercial Rent Income	--	$160,000	$160,000	$160,000
Total Income Estimate	--	$315,150	$359,479	$381,643
Average Annual Debt Service	$176,000	$176,000	$176,000	$176,000
Annual Operating Expense	--	$ 28,000	$ 29,400	$ 30,900
Total Annual Cost	($176,000)	($204,000)	($205,400)	($206,900)
Deficit or	$176,000	--	--	--
Surplus	--	$111,150	$154,079	$174,743

Revised Financial Summary - Alternative B

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Annual Income Estimate	--	$125,626	$161,519	$179,466
Average Annual Debt Service	$108,000	$108,000	$108,000	$108,000
Annual Operating Expenses	--	$ 30,000	$ 31,500	$ 33,000
Total Annual Cost	($108,000)	($138,000)	($139,500)	($141,000)
Deficit or	$108,000	$ 12,374	--	--
Surplus	--	--	$ 22,019	$ 38,466

Revised Financial Summary - Alternative C

	Construction Year	GARAGE OPERATION 1st Year	2nd Year	3rd Year
Annual Income Estimate	--	$149,790	$192,587	$213,986
Average Annual Debt Service	$138,000	$138,000	$138,000	$138,000
Annual Operating Expense	--	$ 34,000	$ 35,700	$ 37,500
Total Annual Cost	($138,000)	($172,000)	($173,700)	($175,500)
Deficit or	$138,000	$ 22,210	--	--
Surplus	--	--	$ 18,887	$ 38,486

A review of the above financial summaries shows that Alternative A has a deficit during the construction period, but will generate a surplus -- or profit -- from the first year of operation -- amounting to $111,150. This grows to $154,079 in the 2nd year, and $174,743 in the 3rd and future years.

Alternative B will show a deficit during the construction period and first year of operation. It will then generate a surplus of $22,019 in the 2nd year, and $38,466 in the 3rd and subsequent years.

Alternative C will also show a deficit in the construction year and the first year of operation. It will generate a surplus of $18,887 in the 2nd year, and $38,486 in the 3rd and following years.

Revised Net Income

If the previous net income summary is revised to include the net income from the remaining parking facilities ($213,000) in combination with the reduced debt service for the three alternative plans, the following is a summary of the financial picture:

	Construction Year	GARAGE OPERATION		
		1st Year	2nd Year	3rd Year
Alternative A:				
Surplus or (Deficit)	($176,000)	$111,150	$154,079	$174,743
Income-Remaining Facilities	$213,000	$213,000	$213,000	$213,000
Surplus	$ 37,000	$324,150	$367,079	$387,743
Alternative B:				
Surplus or (Deficit)	($108,000)	($ 12,374)	$ 22,019	$ 38,466
Income-Remaining Facilities	$213,000	$213,000	$213,000	$213,000
Surplus	$105,000	$200,626	$235,019	$251,466
Alternative C:				
Surplus or (Deficit)	($138,000)	($ 22,210)	$ 18,887	$ 38,486
Income-Remaining Facilities	$213,000	$213,000	$213,000	$213,000
Surplus	$ 75,000	$190,790	$231,887	$251,486

On this basis Alternative A will show a surplus (or profit) even during the construction year. Once the parking structure is placed into operation this surplus grows to $324,150 in the first year, $367,079 in the 2nd year, and $387,743 thereafter.

Alternative B will also show a surplus during the construction year, and a surplus of $200,626 in the first year, $235,019 in the 2nd year, and $251,466 thereafter.

Alternative C will also show a construction year surplus of $75,000 and 1st, 2nd and 3rd year net of $190,790, $231,887 and $251,486 surplus respectively.

Thus any of three plans will generate a significant surplus, with Alternative A producing a greater surplus than Alternatives B or C.

The magnitude of the surplus in all three plans is such that the City of Northampton could reasonably expect to have more net income from the combined parking system, including the proposed new parking structure, than the net parking system revenues which now flow into the City General Fund.

This means that the City of Northampton could continue to use the current net parking system revenues for General Fund budget purposes, and still successfully finance the recommended project.

10. MID & LONG RANGE RECOMMENDATIONS

Mid Range Recommendations

The Parking Management Plan and our recommendations regarding the operation of the parking system are appropriate for taking care of the parking demand which currently exists in the Northampton CBD. Parking spaces are provided in the correct demand areas and the split between long term and short term parking spaces is logical and adequate.

In 500 B.C., Heraclitus said, "nothing endures but change," and we feel that Northampton is no exception. As the complexion of the CBD along with its usages change, the City may experience shifts in demands for different types of parking spaces. For this reason, the City should remain flexible concerning locations, regulations and time limits for parking spaces in the CBD.

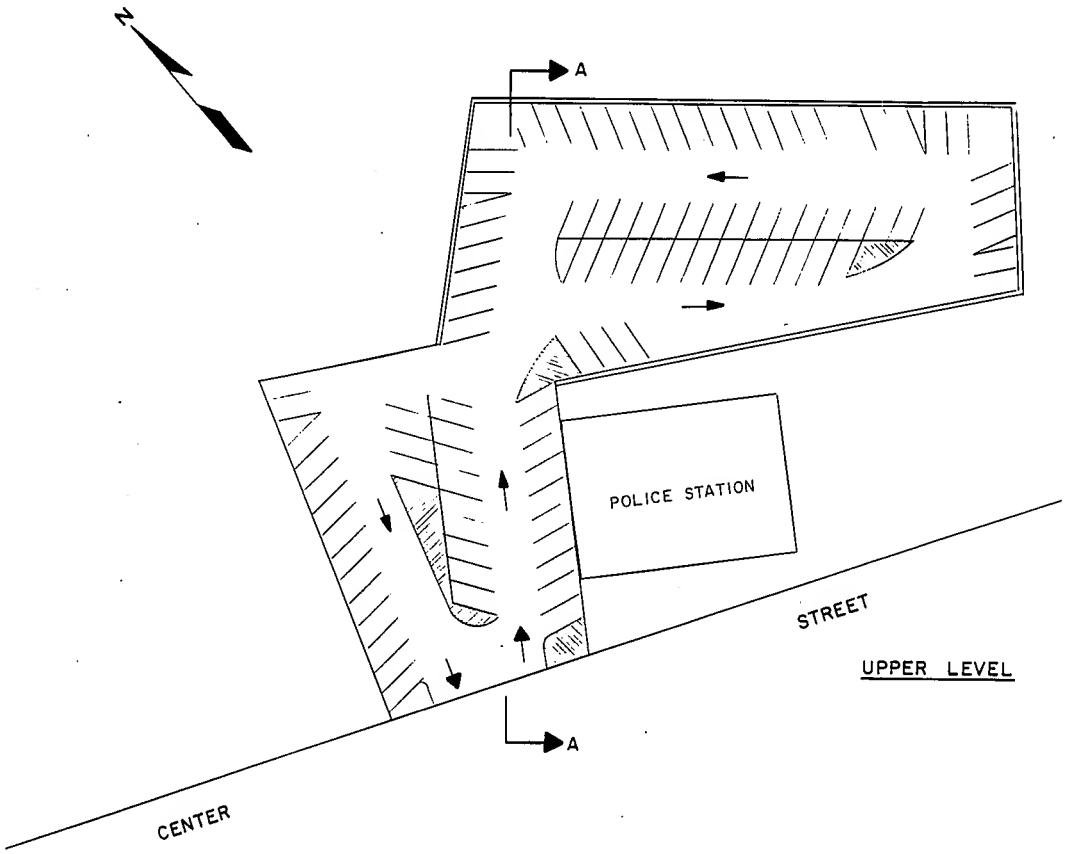
We have suggested the use of monthly permits to be issued to long term parkers. Once this program has been instituted, an indication of the demand for these types of parking spaces will be apparent as deduced from waiting lists for the monthly permits. The facilities where the waiting lists occur will give an indication as where the demand does or does not exist.

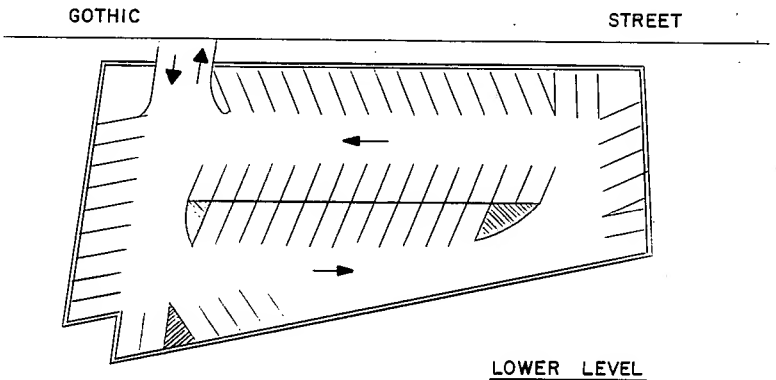
Furthermore, Northampton has municipal parking facilities sprinkled throughout the CBD. By observing, the usage and performance of these facilities, they will further act as barometers for demand. Subsequently, keeping accurate records of income from each off-street facility and the on-spaces by zones or blocksides is highly recommended. Also, these records should be further broken down, to include income from 1-hour meters, 2-hour meters, 10-hour meters and monthly permits. Similarly, accurate records should also be kept of all operating expenses for the parking system only.

In order to keep track of this important and valuable information, the City may wish to establish a division which would deal with parking operations only. Many other municipalities have a Parking Division, Parking Authority, Parking System, Parking Utility, Parking Committee, etc., to handle their parking operations. Some are linked with the municipality's government, others are sanctioned by the municipality and are a completely self-sufficient finger of the City government.

Long Range Recommendations

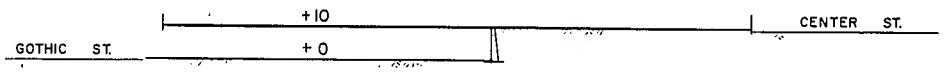
Should the City of Northampton require additional parking space in the future, several of the existing off-street facilities have sufficient dimension to provide for a parking structure without need of acquisition of additional properties. One such facility is the Gothic/Center Street parking lot, across the street from the County Courthouse. We have developed a functional plan to provide a one-level parking "deck" on this site -- it is shown on Figure 8 (next page). As indicated on Figure 8, this plan can accommodate 164 cars, an increase of 75 cars from the existing lot. Additionally, parking lots with sufficient dimension to provide for a parking structure include -- the Roundhouse Lot (multi-level), the Old South Street Lot (multi-level), the Hampton Avenue Lot (one-level deck only), the Strong Avenue Lot (onelevel deck only) and the Masonic Street Lot (one-level deck only). Also, the proposed parking garages at the Armory Street Lot may be designed to accept additional levels or already have the ability to the expanded horizontally (alternatives A and B only). Should the opportunity or need arise, a co-venture with the County could provide a multi-level parking structure on the County Lot off of Merrick Lane.





CAPACITIES

LOWER LEVEL – 64
UPPER LEVEL – 100
TOTAL – 164 SPACES



SECTION A-A

FIGURE 8

FUNCTIONAL DECK PLAN

GOTHIC STREET LOT

CITY OF NORTHAMPTON, MASSACHUSETTS

20 0 20 40 60 80
SCALE IN FEET

RAMP ENGINEERING ASSOCIATES.
CONSULTING ENGINEERS AND DESIGNERS
1616 NORTHERN BOULEVARD, MANHASSET, N.Y. 11030
MICHAEL S. DIMITRI, P.E.